

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Thierry H. Benjamin

Appl. No. To be Assigned

Filed: Herewith

For: **Soft Tip Guiding Catheter and  
Method of Fabrication**

Confirmation No.

Art Unit: To be Assigned

Examiner: To be Assigned

Atty. Docket: P640 DIV  
(1737.1750001/ALF/RJS)

**Preliminary Amendment**

Commissioner for Patents  
Washington, D.C. 20231

Sir:

It is respectfully requested that this Preliminary Amendment be entered prior to examination of the application. This Preliminary Amendment is provided in the following format:

- (A) A clean version of each replacement paragraph/section/claim along with clear instructions for entry;
- (B) Starting on a separate page, appropriate remarks and arguments (37 C.F.R. § 1.111 and MPEP 714); and
- (C) Starting on a separate page, a marked-up version entitled: “Version with markings to show changes made.”

It is not believed that extensions of time or fees for net addition of claims are required beyond those that may otherwise be provided for in documents accompanying this paper. However, if additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under

37 C.F.R. § 1.136(a), and any fees required therefor (including fees for net addition of claims) are hereby authorized to be charged to our Deposit Account No. 19-0036.

*Amendments*

*In the Specification:*

Please substitute the pending specification, with the substitute specification filed herewith. Applicant states that the substitute specification includes no new matter.

*In the Claims:*

Please cancel claims 1-29 and 35 without prejudice to or disclaimer of the subject matter contained therein.

Please substitute the following claims 30-32, 34 and 36 for pending claims 30-32, 34 and 36:

30. (Amended) The method of fabricating a catheter body comprising the steps of:

providing a tubular catheter shaft including a catheter shaft proximal end and a catheter shaft distal end, the catheter shaft having a catheter shaft outer diameter and enclosing at least one catheter shaft lumen;

providing a tubular distal catheter segment including a segment proximal end and a segment distal end, the distal segment having a segment outer diameter substantially the same as the catheter shaft outer diameter and a segment lumen extending between the segment proximal end and the segment distal end;

aligning the segment lumen and the segment outer diameter with the catheter shaft lumen and the catheter shaft outer diameter, respectively, to form an attachment junction; and

melt bonding a tubular sleeve to a distal portion of the catheter shaft and a proximal portion of the distal segment bridging the attachment junction such that at least part of the attachment junction comprises melted material from each of the tubular sleeve, the catheter shaft, and the distal segment.

31. (Amended) The method of claim 30 wherein the attachment junction is characterized by interstitial spaces caused by irregular contact of the segment proximal end with the catheter shaft distal end, and wherein the bonding step further comprises the steps of:

heating the attachment junction to effect a bond between the segment proximal end with the catheter shaft distal end;

fitting the tubular sleeve over a distal portion of the catheter shaft and a proximal portion of the distal segment bridging the attachment junction;

applying heat and pressure to the tubular sleeve and the underlying distal portion of the catheter shaft and proximal portion of the distal segment bridging the attachment junction to further melt and force the materials of the tubular sleeve and the catheter shaft

and the distal segment together to fill the interstitial spaces of the attachment junction and to reduce the outer diameter of the sleeve.

32. (Amended) The method of claim 31, wherein the step of applying heat and pressure further comprises the steps of fitting a heat shrink tube over the tubular sleeve and applying heat sufficient to shrink the heat shrink tube over and apply force to the assembly of the tubular sleeve overlying the distal portion of the catheter shaft and the proximal portion of the distal segment bridging the attachment junction and to melt and force the materials of the tubular sleeve and the catheter shaft and the distal-segment together to fill the interstitial spaces of the attachment junction, the shrinkage of the heat shrink tube reducing the outer diameter of the sleeve, and removing the heat shrink tube from the assembly.

34. (Amended) The method of claim 32, further comprising the step of:

forming the catheter shaft distal end and the segment proximal end with a like plurality of ungular cut sections that are complementary in shape to one another; and wherein the aligning step further comprises the step of:

aligning and mating the ungular cut sections of the segment proximal end with the ungular cut sections of the catheter shaft distal end along the attachment junction.

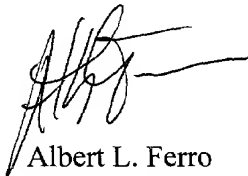
36. (Amended) The method of claim 30, wherein the distal catheter segment comprises a distal soft tip for providing an atraumatic distal tip of the catheter body.

***Remarks***

Upon entry of this amendment, claims 30-34 and 36 are pending in the present application with claim 30 being the only independent claim. Support for amended claims 30-32, 34 and 36 can be found in the specification as originally filed. Applicant respectfully requests that the Examiner give favorable consideration to the claims of the present application. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.



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Date: April 30, 2001

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**Version with markings to show changes made**

***In the Claims:***

30. (Amended) The method of fabricating a catheter body comprising the steps of:

providing a [proximal,] tubular catheter shaft [formed of a relatively stiff material extending between] including a catheter shaft proximal end and a catheter shaft distal end, the catheter shaft having a catheter shaft outer diameter and enclosing at least one catheter shaft lumen [extending between the catheter shaft proximal and distal ends];

providing a tubular distal catheter <sup>is</sup> segment [formed of a relatively flexible material in a tubular form extending between] including a segment proximal end and a segment distal end, the distal segment having a segment outer diameter substantially the same as the catheter shaft outer diameter and a segment lumen extending between the segment proximal end and the segment distal end; [and]

aligning the segment lumen and the segment outer diameter with the catheter shaft lumen and the catheter shaft outer diameter, respectively, to form an attachment junction;  
and

melt bonding a tubular sleeve to a distal portion of the catheter shaft and a proximal portion of the distal segment bridging the attachment junction such that at least part of the attachment junction comprises melted material from each of the tubular sleeve, the catheter shaft, and the distal segment [to adhere the catheter shaft distal end to the

segment proximal end along a mutual attachment junction thereby aligning the segment lumen and outer diameter with the catheter shaft lumen and outer diameter].

31. (Amended) The method of claim 30 wherein the attachment junction is characterized by interstitial spaces caused by irregular contact of the segment proximal end with the catheter shaft distal end, and wherein the bonding step further comprises the [step of] steps of:

[aligning the segment proximal end with the catheter shaft distal end whereby the attachment junction is characterized by interstitial spaces caused by irregular contact of the segment proximal end with the catheter shaft distal end,]

heating the attachment junction to effect a bond between the segment proximal end with the catheter shaft distal end;

fitting the tubular sleeve over a distal portion of the catheter shaft and a proximal portion of the distal segment bridging the attachment junction;

applying heat and pressure to the tubular sleeve and the underlying distal portion of the catheter shaft and proximal portion of the distal segment bridging the attachment junction to further melt and force the materials of the tubular sleeve and the catheter shaft and the distal segment together to fill the interstitial spaces of the attachment junction and to reduce the outer diameter of the sleeve.

32. (Amended) The method of claim 31, wherein[:] the step of applying heat and pressure further comprises the [step] steps of fitting a heat shrink tube over the tubular sleeve and applying heat sufficient to shrink the heat shrink tube over and apply force to

the assembly of the tubular sleeve overlying the distal portion of the catheter shaft and the proximal portion of the distal segment bridging the attachment junction and to melt and force the materials of the tubular sleeve and the catheter shaft and the distal-segment together to fill the interstitial spaces of the attachment junction, the shrinkage of the heat shrink tube reducing the outer diameter of the sleeve, and [further comprising the step of:] removing the heat shrink tube from the assembly.

34. (Amended) The method of claim [31] 32, further comprising the step of:

forming the catheter shaft distal end and the segment proximal end with a like plurality of ungular cut sections that are complementary in shape to one another; and wherein the aligning step further comprises the step of:

aligning and mating the ungular cut sections of the segment proximal end with the ungular cut sections of the catheter shaft distal end along the attachment junction.

36. (Amended) The method of [any of the claims 30-35] claim 30, wherein the distal catheter segment comprises a distal soft tip for providing an atraumatic distal tip of the catheter body.